



Volcanic Aerosol

Recommended Age:

Intermediate Level (5-8)

Concept:

A design brief is a technological way of teaching problem solving strategies to children. A problem is given to the students and they perform work that is related to the situation. Design briefs are encouraged to be integrated across the curriculum. The purpose of a design brief is to teach children how to look at a problem, explore ideas, make a model, and present it.

OBJECTIVE

The student will construct a model using problem solving skills.

Principals:

1. There are different types of volcanoes: composite, shield, and cinder cone.
2. Volcanic eruptions release small particles (aerosols) into the atmosphere, which are thought to reflect incoming solar radiation (thus cooling the climate).
3. The height of the aerosol cloud and the total volume of material released during an eruption is called Volcano Explosivity Index (VEI).
4. Eruptions are given a number from 0 (the smallest or least explosive) to 8 (the largest). Eruptions with a rating of 6 or higher are rare.

ACTIVITY

1. Divide the students into cooperative groups.
2. Discuss the effects of the volcanic eruptions. Introduce probing questions or statements to get their minds thinking so that they will have something to contribute to their cooperative learning group. (Example: Why do volcanoes erupt? What happens to the volcano ashes as they are erupted from a volcano? What do you think happens to the temperature of the Earth as these aerosols block the incoming solar radiation?).
3. Explain to the students that they will be given a problem to solve. Everyone in the group must agree on a solution to the problem. Encourage them to vote (majority rules) when making decisions. Also explain that you will monitor each group, but you will not offer suggestions to help them because they are to solve this problem. You, the teacher, can probe questions to help them think, but try not to tell them how to make the model or solve the problem.
4. Before starting this activity it is very important that everyone knows what is expected of them. Tell the students that they will have a certain amount of time to decide on how to solve the problem and then they will have to design and create a model. It is a good idea to set a timer so that the students can see the remaining time. At the end of the allotted time, each group will present their model and explain how it works, why they made the decisions that they did, what they contributed to the group, if they had any problems, how they solved them, etc.
5. Stress the fact that the students are limited to use **ONLY** the items listed on their sheet. When using scissors demonstrate the proper way of passing them. The materials should be organized prior to class and distributed along with the design brief. Reread the problem on the design brief and tell the students when to begin.